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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/594,509

09/28/2006

Nobutaka Magome

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EXAMINER

PHAM, HOA Q

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/594,509	Applicant(s) MAGOME ET AL.	
	Examiner Hoa Q. Pham	Art Unit 2886	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) 26-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2/14/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of group I (claims 1-25) in the reply filed on 11/19/08 is acknowledged. The traversal is on the ground(s) that "National stage applications filed under 35 U.S.C. 371 are subject to unity of invention practice as set forth in PCT Rule 13, and are not subject to U.S. restriction practice" (MPEP 1893.03 (d)). This is not found persuasive because it is not true for this application. The present international application does not relate to one invention only or to a group of invention so linked to as to form a single general inventive concept (MPEP 1850 (PCT Rule 13.1) and unity of invention exists only when there is a technical relationship among the claimed inventions involving one or more special technical feature (PCT Rule 13.2). Present independent claims 1 and 16 of group I comprise A+X and independent claims 26-27 of group II comprise A+Y; A (i.e., a surface shape detection system) is common to both groups; however, A is known, there is lack of unity *a posteriori*, since A is not technical feature that defines a contribution over the prior art (MPEP 1850 (II)).

The requirement is still deemed proper and is therefore made FINAL.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

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3. The information disclosure statement (IDS) submitted on 2/14/07 has been considered. A copy of form PTO-1449 is attached.

Drawings

4. Drawings filed on 9/28/06 have been accepted.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-2, 7-11, 15-17, 18, 20-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyachi (US 6,400,456).

Regarding claims 1, 10-11 and 15-17, 20-22, Miyachi discloses an exposure apparatus that performs exposure to an object via a projection optical system (PL), the apparatus comprising: a stage (19-20) that is movable in at least directions of three degrees of freedom that include an optical axis (AX) direction of the projection optical system and two-dimensional directions (x-y) within a plane orthogonal to the optical axis while holding the object (15), and can adjust a position of the object in the optical axis direction; a first position detection unit (23) that detects position information (x) of the stage in the optical axis direction; a second position detection unit (23) that detects position information (y) of the stage within the plane orthogonal to the optical axis; a

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surface shape detection system (25B1, 25A1, 25C1, 31A1, 31B1, 31C1) that detects information related to a surface shape of a surface subject to exposure of the object held on the stage (column 10, lines 22-24; column 11, lines 14-19 and column 13, lines 15-17), prior to the exposure; and an adjustment unit (column 12, lines 17-19 and column 7, lines 41-57) that adjusts a surface position of the surface subject to exposure of the object by driving the stage based on the detection results of the surface shape detection system and the detection results of the first and second position detection units, when performing exposure to the object (figure 1).

Regarding claims 2, 11, 17 and 20-22, see column 3, lines 54-58; column 4, lines 1-3 and column 8, lines 38-56 for measuring a best focus position and the adjustment unit adjusts a surface position of the surface subject to exposure of the object, using the measurement results of the measurement unit as a datum (i.e., reference plane).

Regarding claim 7, see figure 1 for the surface shape detection system includes an irradiation system (25) that irradiates an illumination light to a strip-shaped area that the object held on the stage crosses by movement of the stage and a photo-detection system (31).

Regarding claims 8-9, see column 7, lines 29-63 for the use of laser interferometer (12, 23).

Regarding claims 18 and 23, see column 11, lines 50 for calibration.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 3-6, 12-13 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyachi in view of Hagiwara et al (US 2002/0041377).

Regarding claim 3, Hagiwara et al teaches that the measurement unit has an aerial image measurement instrument that measures a change of the aerial image in at least one point within an effective exposure field, with respect to a change of the position of the stage in the optical axis direction, and measures the best focus position of the projection optical system based on the measurement results (paragraphs [0321] and [0324]). It would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the focusing detection unit of Miyachi by the measuring unit of Hagiwara et al because they are function in the same manner.

Regarding claims 4-6 and 19, it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the focusing system of Miyachi by an off-axis alignment system that is used to detect an alignment mark formed on the object because they are equivalent in function.

Regarding claims 12-13, Miyachi teaches that the AF sensors (25B1, 25B2) are use for focusing and detecting the position of the surface (column 10, lines 7-24). It

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would have been obvious to one having ordinary skill in the art at the time the invention was made to arrange the sensors so that the position of the position of the stage in the optical axis direction via the projection optical system is detected.

9. Claims 14 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyachi in view of Nei et al (US 2006/0238730).

Nei et al teaches that the liquid (50) is filled between the projection optical system (PL) and the object (P) (see figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to fill the liquid between the projection system and the object of the system of Miyachi, thus an accuracy of the measurement is obtained.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Following references relate to exposure system: Hirukawa et al (2005/0024612 and 2007/0115448); Kaneko et al (6,411,387); Ina (2003/0193655); Yamane et al (5,523,843), and Takeishi (6,573,976).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoa Q. Pham whose telephone number is (571) 272-2426. The examiner can normally be reached on Monday through Friday, 8:00AM TO 4:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tarifur Chowdhury can be reached on (571) 272-2287. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hoa Q. Pham/
Primary Examiner, Art Unit 2886

HP
January 28, 2009